

"Caisson for the transport of goods"

* * * * *

DESCRIPTION

5 The present invention refers to a caisson for the transport of goods, in particular to a container, that is a large metal caisson with standard dimensions, for maritime, truck, or railway transport of goods.

In the last few years, in the international shipping sector, big technological changes have been observed in port structures, in the field of informatics and in the field of communications.

10 Larger and larger container-ships are being constructed, even of 8000 teus (measurement unit for containers), against the 1500/2000 teus ships available a few years ago.

Port terminals are increasingly efficient and capable to offer larger and larger wharves and higher and higher depths (at least 16 m) to receive these
15 gigantic ships.

There are upgradings of electronic infrastructures in order to offer all the users the real time information relative to the movements of goods.

All this with the purpose to reduce to the least the dead times for the transit of goods in the various ports in the world and with the various port
20 authorities, and to allow the goods to reach their markets and therefore their consumers in the shortest possible time.

Experts in the field foresee, in fact, very high percentages of growth in sea forwarding and with conspicuous investments in this sector for the future.

25 In this extreme modernisation context, in this increasingly frenetic transport cycle, container plays a very important role.

The container has simplified the transport of goods, and for this reason port terminals with specific cranes have been built to handle them, specific ships have been built to transport them, and specific trailers for their ground
30 transport have been built.

However the container, in its various standard dimensions, has always remained the same. The container has a parallelepiped shape, and normally, one of its smaller surfaces includes two doors from which the goods get loaded and unloaded.

5 When containers are transported on the land they are put on lorries, predisposed for their transport, and for the loading and the unloading of goods they must reach wharves where fork lifts can get close and get inside the same container in order to be able to handle the goods.

10 The US patent 3,938,678 describes a container and a structure with wheels which allows it to get inside the container only from the wharf, when hooked by a specific fork lift. Such structure is not integral part of the container, since it gets completely extracted from the same, and it can be utilised only with the aid of the wharf.

15 The wharf is a raised masonry work placed at the level of the base of the container in order to facilitate the transfer of the goods from outside to inside of it and vice-versa. In this way fork lifts can even access inside the container.

20 In view of the state of the art herein described, object of the present invention is to provide a container capable to considerably reduce the dead times for the loading and the unloading of goods, Therefore the dead times for transit.

25 According to the present invention, such object has been attained by means of a caisson for the transport of goods comprising a flatbed extractable from said caisson; said flatbed is sliding along the bottom internal surface of said caisson; characterised in that said flatbed comprises at least one first pair of resting feet, hinged in said flatbed in the vicinity of one of its ends, having a first horizontal rest position folded inside of said flatbed and a second vertical working position, capable to sustain said flatbed when said flatbed is extracted from said caisson.

30 Owing to the present invention it is possible to provide a container

which has an extractable flatbed with resting feet as an integral part, which allows the loading and the unloading of the goods without the aid of the wharf. In addition, according to the present invention a new universal type container is obtained which allows its utilisation both with and without wharves, and in addition to that, both when placed on a lorry and when placed on the ground.

The characteristics and the advantages of the present invention will become evident from the following detailed description of an embodiment thereof, which is illustrated as a non limiting example in the enclosed drawings, in which:

Figures 1- 6 represent an example of use of the present invention in different stages;

Figure 7 shows an example of embodiment of the flatbed in perspective view;

Figure 8 shows an example of embodiment of the flatbed in a side view;

Figure 9 shows an example of embodiment of the flatbed in a front view;

Figure 10 shows the base of the container in a front view;

Figure 11 shows the base of the container in a top view.

Let's now consider Figures 1-6 which show a lorry 10 which transports a container 11, or any other type of caisson to handle the goods 12, placed inside of it.

Inside the container 11 a flatbed 14 is predisposed, which is integral part of the same, which can slide inside the container (on its lower surface), as we will see hereinafter. The flatbed 14 is provided with a pair of resting feet 15, hinged in the flatbed 14, and preferably provided with wheels 16, which can rest on the ground capable to sustain the flatbed 14. On the sides of the flatbed 14 walls 17 are preferably provided in order to contain the goods sideways in such a way that these cannot fall from the sides during the

operations of extraction or insertion of the flatbed 14 from the container 11.

At the moment of the unloading of the goods 12, a fork lift 13 gets near the opening of the container 11, hooks the flatbed 14 and it extracts it by pulling it. The pair of resting feet 15 gets rotated manually in order to rest on the ground, thus allowing the complete exit of the flatbed 14 from the container 11, up until the reaching of an end of stroke not shown. In this way the flatbed 14 is almost totally external to the walls of the container 11, resting and fastened (as we will see hereinafter) to the end of the container on one side and by the resting feet 15 on the other one, with the goods totally in view from the outside.

Once the flatbed 14 is extracted, the walls 17 get lowered down and the goods can be unloaded. The unloading (or the loading) of the goods can be carried out, in this way, on three sides of the flatbed 14 thus using very short times, without the fork lift to introduce into the container, also owing to the possibility to be able to use even more than one fork lift.

We refer now to Figure 7 which shows in perspective an embodiment of the flatbed 14, without the walls 17.

The flatbed 14 is made up of a rectangular frame made of metal section bar on which marine plywood (not shown) of about 3 cm in thickness will then be placed which will serve as a base for the goods. The dimensions of the flatbed 14 are the ones which allow it to be able to slide inside standard containers. Inside the external frame, according to the longitudinal direction of the frame (long side of the frame) three pairs of bars 20 of section bar equally distant to each other are preferably placed. Each one of these bars 20 is suitable to sustain a plurality of wheels 21, for example 10 in the caisson of a 20 feet container, lined up with each other and capable to slide along the base of the container 11. The wheels 21 are of the type having a small diameter, a little more than the thickness of the flatbed 14, and high carrying capacity.

In the vicinities of one end of the flatbed 14 (as regards the long side of

the frame), the one which will be the most internal one in the container 11, two small bars 22 are placed, arranged transversally as related to the pairs of bars 20 and fastened to them. The distance of these bars from the end of the flatbed 14 is equal to about 10-20% of the entire length of the same flatbed 14. At the centre of each one of the bars 22 and perpendicularly to them a pin 23 is placed, facing toward the door of the container 11.

On the external edge of the flatbed 14, along the longer sides, a few guides 24 are preferably placed which hold and guide the walls 17.

The resting feet 15, hinged in the flatbed 14 in the vicinity (equal to a distance of about 20% of the entire length of the flatbed 14) of one end of the flatbed 14 (as related to the long side of the frame), the one closest to the door of the container 11, are telescopic and they have a portion 25 which can be extended, and they can be adjusted in height by means of holes provided in the extensible portion 25 and locked by means of pins 26. In condition of rest, the resting feet 15 are sunk in the frame 14. Durante the extraction of the flatbed 14 from the container 11, they are manually extracted from the resting position, they are adjusted in height in such a way so that their total length is equal to the one of the height of the plane of the container 11 from the ground.

They also get locked in vertical position by means of a pin 31 made of steel. The pin 31 is predisposed in such a way that the resting feet 15 will not accidentally close, and it is a pin passing in the external section bar of the flatbed 14 and in the same feet 15.

In the vicinity of one end of the flatbed 14 (as related to the long side of the frame), the one closest to the door of the container 11, and therefore near to where the resting feet 15 are hinged, an additional pair of resting feet 27 are hinged having smaller dimensions than the one of the resting feet 15 and equal to about 15-20 centimetres provided with wheels, to be used when the container 11 is unloaded on the ground utilising a port wharf and/or a warehouse. They also have a pin 32, analogous to the locking pin 31, in

vertical position.

Figures 8 and 9 show the flatbed 14 comprehensive of walls 17 respectively in a side view and in a front view. In Figure 8 one can notice rings 30 fastened to the flatbed 14 which can be utilised for the fastening of the load with belts.

The walls 17 slide owing to the guides 24, made up of a steel C-section bar, in turn welded to the flatbed 14; the locking of the walls on the guides takes place both in the working position as well as in the position of rest by means of pins made of steel.

We now refer to Figures 10 and 11 which show the base 40 of the container 11. On the base 40 it is preferable to fasten guides 41 according to the longitudinal direction of the container (long side of the container) in order to facilitate and to guide the wheels 21 of the flatbed 14. The guides are in a number equal to the number of the pairs of bars 20, and they have a substantially U-shape, that is they have the edges slightly raised in order to contain and to guide the wheels 21.

Between the guides 41 and in the vicinity of one end of the base 40 toward the door of the container 11, L-shapes 42 are fastened, having the shape of an L. In the upper part of the L a hole 43 is provided. When the flatbed 14 is extracted, the L-shapes 42 stop the advancement of the bars 22 and the pins 23 will get into the holes 43. It turns out to be preferable to place a rubber profile between the L-shapes 42 and the bars 22 in order to attenuate the possible collision between these. The L-shapes 42 and the bars 22 have the function of end of stroke of the flatbed 14 when this gets extracted, and also the function to prevent possible vertical movements of the flatbed 14. In this way the flatbed 14 is as a result integral part of the container 11 and therefore it is not separable.

In an alternative embodiment the wheels 21 can be placed on the bottom internal surface of the caisson and the guides 41 can be placed on the bottom internal surface of the flatbed 14.

According to the present invention, there are great advantages and savings in time for the company which unloads or loads the goods, for the carrier which for the completion of these operations stops a time span considerably shorter than what takes place now, for the shipowner who can re-utilise the container for other trips, and for customs officer who can carry out more easily and in a shorter time the verifications of the goods on the complete load being loaded in the same container.

It is in fact faculty of Customs authorities to verify the transit goods by objectively controlling the nature of the goods inside the container, on the base of the accompanying documents and which are declared. Today this control can take place only summarily and only for parcels which are near the doors of the containers. In fact, when open it is possible to verify only the goods at sight, not being able to control the ones which are loaded at the end of the container, unless by completely emptying it with high expenditures, long times and the aid of a wharf and/or warehouse.

With the present invention it is sufficient to extract the flatbed 14, without the aid of any wharf, and the goods is thus as a result completely at sight, event the ones stored at the end of the container.

In the present description reference has been made, in particular way, to standard type containers, but the present invention is applicable to any type of container, such as 20', 40', 40' HQ, as also to any lorry or trailer having an open or closed caisson, for the transport goods. In this case too the loading and the unloading of the goods can easily take place without the aid of the wharf.